Report of the JAB Sub-Committee for Increasing Female Enrollment in B.Tech. in IITs

by Prof. Timothy A. Gonsalves (Chair) + 12 members

12th April 2017

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Preamble

In its meeting held on 21st August 2016, JAB took note of the low number of women students in BTech in IITs. JAB authorised the Chairman, JAB to constitute a Sub-Committee to look into this issue and recommend measures for improving the representation of women in BTech. The Sub-Committee constituted by Prof. Bhaskar Ramamurthy, Chairman, JAB-2017 is given below.

The Sub-Committee met on 13th December 2016 and on 10th February 2017 in the Board Room of IIT Delhi. A number of faculty from various IITs were invited to the meetings. Between the meetings and subsequently, there was interaction by email. Faculty of various IITs who are involved in the JEE (Advanced) admission process were also consulted, especially to consider feasibility of proposals and to do simulations with past data.

Constitution of the Sub-Committee

Chairperson

Dr. Timothy A. Gonsalves, Director, IIT Mandi

Members

1. Dr. Mudrika Khandelwal, Asst. Professor, Mat. Sci. & Met. Engg., IIT Hyderabad.
2. Dr. Debashree Guha, Asst. Professor, Maths, IIT Patna.
3. Dr. Pushpak Bhattacharya, Director, IIT Patna.
4. Dr. Sudeshna Sarkar, Professor & Head, CS&E, IIT Kharagpur.
5. Dr. Mahima Arrawatia, Asst. Professor, EE, IIT Jodhpur.
6. Dr. Manju Khan, Assoc. Professor, Maths, IIT Ropar.
7. Dr. C. Bhamidipadi, Asst. Professor, Basic Sciences, IIT Bhubaneshwar.
8. Dr. Abhay Gautam, Asst. Professor, Mat. Sci. & Engg., IIT Gandhinagar.
9. Dr. Pradeep C. Parameswaran, Assoc. Professor, JEE Chair, IIT Mandi.
10. Dr. Renu Ramesan, Asst. Professor, SCEE, IIT Mandi.
11. Dr. Shalini Gupta, Assoc. Professor, Chem. Engg., IIT Delhi.
12. Dr. V. Kamakoti, Professor, CS&E, IIT Madras.

Invitees to the Meetings

The following were invited by the Chair to participate in the meeting on 13th Dec 2016:

1. Prof. Arvind K. Nema, JEE Chair, IIT Delhi.
2. Prof. Ravinder Kaur, HSS, IIT Delhi.

The following were invited by the Chair to participate in the meeting on 10th Feb 2017:

1. Prof. Indranil Manna, Director, IIT Kanpur (participated for a short time, through NKN).
2. Prof. Arvind K. Nema, JEE Chair, IIT Delhi.
3. Prof. Aditya Mittal, JEE Vice-Chair, IIT Delhi.
4. Prof. Ravinder Kaur, HSS, IIT Delhi.
5. Prof. Neela Nataraj, Maths, IIT Bombay.
6. Prof. P. S. Ghoshdastidar, JEE Chair, IIT Kanpur (NKN).

1 The Context

In 2016, the percentage of women admitted to BTech in IITs was only 8% even though around 25% female candidates had registered for JEE Main. The percentage of women in BTech in IITs has fluctuated between 8-12% over the past many years. At the same time, women constitute 28% of about 40 lakh engineering students in India (2014-15).

Engineers develop products and technology for the benefit of society. Innovative and productive engineers are more likely to emerge from an educational system that has great diversity of viewpoints and sensitivity for the needs of society. An engineering team that has strong members of various segments of society is more likely to benefit society. Studies have found that companies that have greater diversity in their workforce are more profitable.

It is a fact that girls perform as well as or better than boys in a range of academic measures such as the 10th and 12th Board exams, degree programmes including those in IITs, etc. Their performance in science subjects in Board exams is exemplary. Women are leaders in every field of endeavour despite the hurdles of being a small minority in many male-dominated fields. In particular, they have shown that they are as capable as men in engineering and technology-based careers. Women are the users and consumers of many of the products and technologies developed by engineers, including IIT graduates.

Today, with barely 8-10% females in BTech while females form 50% of society, the IIT BTech is not serving the nation to the fullest. We are not giving the best education to our BTech students. We are not giving education to almost half of the best young Indians. For IIT BTech to retain its place as one of the best UG programmes world-wide, this situation must be redressed.

2 Analysis

Several factors were identified as contributing to the problem. These include societal biases (attitudes of parents, family, teachers, etc), lack of sufficient role models, and the nature of the JEE (Advanced) exam.

The IIT BTech is the pinnacle of engineering education in India. It is intended to produce technology leaders for the Nation. As such, only the very best and highly trained candidates are selected for IIT BTech. After admission, they are given an exceptionally good eduction with lavish expenditure on labs, etc. Admission to the IIT BTech is highly sought after. With about 10 lakh aspirants for 10,000 seats, this is among the most selective admission processes world-wide.

2.1 Nature of JEE (Advanced)

Given the ~1% acceptance ratio, the JEE (Advanced) is designed in such a manner that there is a sufficient spread in the performance of the top 2-3% of students so that admission can be made on an objective basis. Due to the strong demand, a large coaching industry has developed. There is an unfortunate perception that coaching is the key to admission to IITs. Parents are willing to spend large amounts of money and have their children spend years preparing for the JEE (Advanced). Often they spend the final years of schooling in coaching institutes in remote cities such as Kota. Some do not even attend regular school. Due to societal preferences and biases in India, by and large it is the sons who are sent for coaching rather than equally talented daughters. Holding traditional, paternalistic views, parents may

believe that they are acting in the best interests of the girls, that they are protecting them from a hostile society, that they are preparing them for a suitable feminine role in life.

It is noted that even when the number of girls taking JEE rose to about 33% due to exam fee waiver a few years ago, the number getting admitted to IITs stagnated at 8-12%. This indicates that less access to coaching is restricting the opportunities for talented girls to get an IIT BTech.

2.2 Societal Biases

There are overt and subtle biases in society against female students opting for engineering careers. These start with parents and close family who may hold traditional views on the genders. Many parents still believe that engineering requires brute strength.

In schools, many teachers have traditional views on the career options for boys and girls. Hence, they consciously or unconsciously advise and steer girls towards more "feminine" careers rather than the "masculine" engineering. Likewise, textbooks often cast girls/women in "feminine" roles.

Society at large, including the media, advertising and movies, still has strong gender-based stereotyping that promotes certain roles for women. Engineering is not prominent in these roles. Within engineering, women tend to have different areas of interest compared to men. They have more interest in life sciences, societal relevance, etc. Changing the focus of some UG programme or starting new ones would attract more women. For e.g., "Chemical Engineering" could be reoriented to "Chemical & Biomolecular Engineering".

2.3 Lack of Role Models

For long, engineering was considered a male area. Hence, the number of women in prominent positions in engineering, who would serve as role models, is low. Attitudes are changing, and today we find that 28% of all engineering students in India are women. Given the very low number of women in IIT BTechs, schoolgirls who aspire to do engineering tend to opt for NITs and other engineering colleges in preference to IITs. The very low admission rate of females in IIT BTech discourages young schoolgirls from trying for IIT.

2.4 Discussion

The pools of male and female candidates for IIT BTech are similar in terms of demographics and training. Good schooling is critical for an IIT BTech. In most good schools, roughly half the students are girls. In the School Boards girls do as well or even better than boys. When it comes to engineering entrance exams and admission to engineering, women drop to about 1/3rd. The numbers are still very large – about 3,00,000 women students join B.E./B.Tech. each year in India, a percentage of 28%. In NITs, there are 7,820 BTech women constituting 22.1% of the total BTech enrollment.

Table 1: Percentages of female candidates at various stages of the JEE process

Year	Registered for JEE (Main)	Selected for JEE (Adv)	Appeared for JEE (Adv)	Qualified JEE (Adv)	Admitted to IITs
2014	23.3	18.6	17.9	11.1	8.8
2015	26.2	18.4	17.4	11.5	9.0
2016	25.7	20.1	18.8	12.5	8.0

Only at the stage of entrance to IITs the fraction of girls drops dramatically due to systematic societal biases. These biases essentially result in much lower access to coaching, and the reality is that coaching plays a significant role in preparation for JEE (Advanced). Hence, the key to increasing the female ratio in IIT BTech is to provide sufficient motivation and incentives such that parents and schoolgirls drive themselves to crack JEE (Advanced) to the same extent that schoolboys do.

A few of the committee members surveyed some women students in IITs, both at the BTech and the PG level. Some of the BTech students were opposed to any preferential treatment which they felt would brand all of them as inferior, even those who had won a seat on gender-neutral basis. However, others were in favour of preferential treatment in order to give a chance to the girls who have already qualified in JEE (Advanced). PG students, who had done their BE/BTech in other institutions, some of whom had tried for IIT BTech but did not make it, were more in favour of preferential treatment to increase the number of girls who would get the benefit of an IIT BTech.

The committee debated various issues related to preferential treatment for women. The committee was not in favour of any scheme that would persist indefinitely or that would lower the quality of the BTech programme. Given that the seat allocation is done by software and extensive data is available, a data-driven approach is preferred. Any scheme of preferential treatment should be based on past data, have quantifiable goals, and a definite termination once the goals are met or it is found that the goals are unrealisable. With these provisos, almost all members of the committee were in favour of preferential treatment, though a few members were opposed to any form of quotas.

A study done at IIT Delhi compared the overall CGPA of male and female BTech students over the years 2003-15. It was found that females consistently outperformed males by about 1 grade. It was also found that final CGPA is significantly correlated mainly with 1st semester SGPA. Hence, admission of more women to IITs, even if they have lower JEE (Advanced) ranks, will not result in lowering of academic standards. On the contrary, the academic performance and the quality is likely to increase.

3 Conclusions and Recommendations

3.1 Conclusions

The committee concluded that:

1. Women are grossly under-represented in BTech in IITs due to societal biases. This situation needs to be changed as greater gender diversity will improve the academic quality of IITs and of the companies and other institutions where our graduates work. As institutions of national importance, it is our responsibility to serve all of Indian society, and to serve in the best possible manner.
2. After women students join BTech at an IIT, they are found to perform better than their male colleagues. After graduation, they go on to have good careers, despite hurdles such as the "glass ceiling" and family expectations.
3. Admission of more women to IITs, even if they have lower JEE (Advanced) ranks, is expected to result in a raising of the academic performance and standards in IIT BTech.
4. There exists today a sufficient pool of qualified female candidates for BTech in IITs. In 2016, although only ~840 female candidates were admitted to IITs, about 4,570 female candidates qualified in JEE (Advanced). Thus, without lowering the qualification standard, we could in principle admit up to 45% women even today.
5. There exists today a very large pool of highly capable females passing out of 12th Std every year, and entering into engineering. If even a small fraction of the best of these are motivated to put in extra effort, automatically, the percentage of women entering IIT BTech will rise to 20-30%.

3.2 Recommendations

The committee recommends the following strategy:

1. **Kickstart higher enrolment**: immediately increase the number of women in BTech in IITs to serve as a role model for schoolgirls. Once parents see BTech in IIT as a viable option for females, they will drive and support their daughters also to excel in JEE (Advanced).
2. **Encourage early achievers**: identify high achievers amongh schoolgirls at say 8th Std, motivate them towards an engineering career, and provide them with systematic help in preparing for the highly competitive JEE (Advanced)
3. **Promote societal change**: provide counseling for parents, school teachers and schoolgirls in a variety of ways to change their mindset towards encouraging girls to aim for the top engineering colleges.

Step 1 is necessary to catalyse the process of attitudinal and societal change in Steps 2 and 3. For Steps 2 and 3 to be effective, there must be a critical number of women in each IIT. Given various factors such as the gender-based performance in School Board exams, gender-ratio in engineering seats in India, etc, the committee recommends 20% of the sanctioned strength as a minimum target to be achieved. Once this target is achieved, the increase of women in BTech in IITs will become organic.

In line with this strategy, the committee recommends the following short-term and long-term steps to address the problem.

A. Kickstart Higher Enrollment

Visibly and significantly increase the number of women students in BTech in IITs. They will serve as role models for bright schoolgirls. These schoolgirls and their parents will come to see IIT BTech as a viable option to strive towards.

1. Create a limited number of supernumerary seats for women in each IIT for a limited time until the number of women in BTech reaches 20% of the sanctioned strength in each IIT. Each IIT to steadily increase the gender ratio from the current 8-10% to reach 20% in 2-4 years. These supernumerary seats to be filled only by female candidates who have qualified JEE (Advanced). (See details in Section 3.3.1.)
2. All women students to be awarded merit scholarships regardless of parental income. Academic eligibility similar to MCM.
3. Prizes to be instituted in the Convocation, Institute Day, Foundation Day, etc for meritorious women students.
4. Reorient branches or start new branches that are more in tune with the aspirations and needs of women. E.g., "Chemical Engineering" could be renamed as "Chemical & Biomolecular Engineering".
5. In the time between declaration of JEE (Advanced) results and the start of counseling, each IIT to have a team to reach out to qualified female candidates to encourage them to fill in larger number of choices in the IIT system to increase their chance of admission to IIT BTech. Girls and their parents could be invited to visit a nearby IIT for in-person advice.
6. Publicise women B.Tech. graduates and successful women engineers as role models in schools.
7. Preferential treatment in Items 1 and 2 above to be applicable in each IIT only for **EITHER** a maximum time period (say 8 years), **OR** until the percentage of women in that IIT reaches 20% consistently over a period of 3 successive years, **OR** if it is found that over a period of 3 years the nominal female percentage does not increase.

B. Encourage Early Achievers

Steps aimed at bright schoolgirls in the last few years of schooling to motivate them towards engineering and IIT BTech.

8. Identify girls from 8th Std onwards who have a high potential to excel as engineers. Mentor them systematically to motivate them for careers in engineering and to help them to prepare for admission to IIT. This would include online/in-person sessions during the school term and internships in IITs during the holidays.
9. Leverage the IIT-PAL scheme to improve the performance of schoolgirls in sciences.
10. On March 8th, International Women's Day, girls from schools in the region be invited to visit IITs and interact with students and faculty to raise their interest in B.Tech. programs of IITs

C. Promote Societal Change

Change the mindset that today limits the opportunities for girls to excel.

11. Every IIT to have a Women's Centre for generating awareness on gender issues and providing a forum for women students, faculty and staff.
12. Every IIT to have a Women in Science and Engineering (WISE) professional group. This provides a forum for women students to discuss their professional problems and aspirations, to organise competitions etc for women students.

D. General

13. In each IIT, one post (at the level of Dean) be responsible for collecting and monitoring gender based data in recruitments and JEE or similar exams. Sufficient budget to be provided for this and outreach activities targeting schoolgirls.
14. Detailed analyses of the JEE and JEE Advanced exam data looking at gender factors specifically are required. Besides analysis by JIC, anonymised raw data to be made available to other faculty who wish to study gender factors.
15. Some studies outside India have found that girls do better when there is less time pressure. It needs to be studied whether or not the format of JEE (Advanced) with multiple-choice questions and timed tests inadvertently favours male candidates.

3.3 Practical Issues

Now, we highlight some practical issues related to our recommendations.

3.3.1 Seat Allocation

We first list some principles that are to be followed. Next we discuss issues in providing female-only supernumerary seats for a limited time, based on simulations of various scenarios. Finally, we present the proposed seat allocation procedure.

3.3.1.1 Principles

Our proposed seat allocation should achieve the following:

1. According to the recent IIT Council decision (Item 50.11, dt. 23/8/16), IITs are collectively committed to increasing enrollment to 1,00,000 by 2020. The supernumerary seats for women BTech students are created from within this increase.
2. The number of male students admitted to not be reduced, unless the overall performance of male candidates in JEE (Advanced) declines vis-a-vis females.
3. Any female candidate who would have got a seat prior to this scheme will get the same or a more preferred seat with this scheme.
4. Rank-based merit is strictly followed within the pool of male candidates and within the pool of female candidates.
5. Statutory reservation for SC, ST, OBC and for PH is followed in the supernumerary seats as for the sanctioned seats.

3.3.1.2 Proposed Seat Allocation Procedure

Based on extensive simulations of many scenarios, only two strategies are worth considering for increase in female enrollment:

1. Simultaneously add the same high percentage (8% to 20%) of female supernumerary seats in all IITs. I.e., add 800-2,000 seats across all IITs in say July 2018.
2. If a certain number of seats are won by females in gender-neutral allocation, earmark these for females plus optionally add a number of female supernumerary seats that varies from IIT to IIT.

Option (1) is practically infeasible as the same large additional space cannot be guaranteed to become available in July of a given year in all 23 IITs simultaneously. *Option (2) is found to be the only feasible solution* (as explained in Section 3.3.1.3 below).

We outline the proposed seat allocation procedure here. We recommend an overall target of 12%, 16% and 20% women in years 1, 2 and 3 of operation of this scheme.

The business rules and detailed procedure would be worked out by JIC and JoSAA.

1. JIC/JoSAA estimates the nominal percentage of females, Nf(Z)%, who would be admitted into the sanctioned seats of each IIT Z during the current year with gender-neutral allocation.[1]
2. Each IIT Z decides on the target percentage of females for this year, T(Z)%, based on hostel/classroom/lab space, etc., where T(Z)% ≥ Nf(Z)%. It is desireable that the indivdual target percentages not be less than the overall annual targets of 12%, 16% and 20%.
3. The number of female supernumerary seats, Fs(Z), required in order to achieve T(Z) % is computed. Fs(Z) = S(Z)*(T%-Nf%), where S(Z) is the sanctioned strength.
4. The supernumerary seats are distributed among the branches to achieve the desired even distribution of female seats in each branch.
5. JIC/JoSAA works out the reservation roster for SC/ST/OBC/PH as usual for the sanctioned seats and for the female supernumerary seats.
6. JIC/JoSAA earmarks for females T(Z)*S(Z) seats in IIT-Z including the female supernumerary seats and sufficient seats from the sanctioned strength.
7. JIC/JoSAA does the seat allocation considering both gender-neutral and female seats for female candidates, giving priority to female seats.

3.3.1.3 Discussion

If gender-neutral allocation results in Nf(Z)% female candidates admitted in IIT Z, our proposal is to add sufficient supernumerary seats exclusively for females in order to increase the total female percentage to a target T(Z)%. The number of seats occupied by male candidates does not decrease.

E.g., assume that the sanctioned strength of IIT-Z is S = 800. In the previous year, suppose Nf(Z)% = 10% females were admitted with gender-neutral allocation, i.e. 80 out of 800. In

1 This could be done a priori by taking the previous 1-3 years gender ratio, assuming that the gender-wise performance is similar this year also. More accurately, a dry run allocation can be done with this year's choice lists with the sanctioned seats only.

the current year, the target is 15% of 800. This implies a total of 120 females. Assuming that again 80 would get admitted gender-neutral, we need an additional 40 supernumerary seats earmarked for females to achieve the target of 15%. The number of male candidates admitted remains at 800-80 = 720.

The question is how to achieve this within the framework of the JoSAA seat allocation and following the Principles enunciated above. In order to work out the detailed implementation, we have done simulations of a wide range of scenarios using real data from past years JoSAA seat allocation. This data includes the rank lists with gender information, the choice lists of all the candidates and the seat matrix. The simulations were done using the actual JoSAA seat allocation software, modified to include supernumerary seats for females. Hence, the results are realistic.

We simulated a number of scenarios including (Option 1 and Option 2 in Sec. 3.3.1.2):

- Adding similar % of seats to all IITs
- Adding similar % of seats to all IITs except for the 1-3 least preferred by females
- Adding similar % of seats to all small (new) IITs
- Adding seats to only one highly preferred IIT
- Adding seats to only one mid-preference IIT
- Adding seats in only a more preferred branch in all IITs
- Adding seats in only a less preferred branch in all IITs

On the face of it, one might expect that if say 800 girls were admitted in one year and we add 400 female supernumerary seats in the next year, the number of girls getting in would be 1,200. However, the simulation results of Option 1 are counter-intuitive. E.g., we added 135 female supernumerary seats only to IIT-B, which is high-ranking in candidate preferences. The result: IIT-B got 112 additional girls. However, other IITs lost 92 girls. So, when we added 135 female seats, the total girls in all IITs increased by only 20, with boys capturing 115 seats!

This counter-intuitive phenomenon of *seat-capture* was observed in practically all scenarios. It occurs due to the low fraction of girls qualifying in JEE (Advanced) and their lower ranks compared to boys.

To understand seat-capture, consider the10 girls with a ranks between 900-1,000 who had got their least preferred branches in IIT-B. When additional female seats are added to all branches, these 10 girls will move up to more preferred branches. The 10 gender-neutral seats that they vacated are now competed for by all candidates with lower ranks. As 88% of these are boys, it is likely that boys will *capture* 9 out of 10 of the vacated seats.

In a set of simulated scenarios for Option 1, we added 8%, 15% and 20% female supernumerary seats to every IIT. These were distributed in all branches in each IIT. The result: in each case, approximately half the additional seats were lost to seat-capture by boys. E.g. when 8% is added to the base 9.6%, instead of achieving 17.6%, we achieve 13.2%. Similarly, adding 15% and 20% we achieve only 17.5% and 18.9% instead of the expected 24.6% and 29.6%.

We simulated the proposed seat allocation, Option 2 in Section 3.3.1.2 above. In this case, seat-capture is mostly avoided. The female percentage is very close to the target in all scenarios. The number of seats allotted to male candidates does not decrease.

3.3.2 Time Limit on Preferential Treatment

As parents and schoolgirls see that IIT BTech is a viable option for them, as they see more role models in IIT BTech, they will prepare more seriously for JEE (Advanced), similar to their male siblings and classmates. Given the large pool of highly talented females in good schools, and in engineering, it is almost certain that with our proposed incentives, females will in a few years do as well as or better than male candidates in JEE (Advanced). The number getting admitted into the sanctioned seats will increase steadily. This organic growth requires a few years to become effective as interventions must be done from 8th Std onwards. Hence, the number of female supernumerary seats in an IIT is expected to decrease year by year, after 2-3 years of operation of this scheme.

Our proposal differs from all statutory reservations and quotas in India in two key respects:

1. The data-driven time limit on the scheme
2. At any time that the nominal percentage in the previous year reaches this year's target, the number of supernumerary seats automatically drops to zero.

It is strongly recommended that strict time bounds be applied to the preferential treatment in Items 1 and 2 in Section 3.2 as specified in Item 5.

3.3.3 Autonomy of IITs

Each IIT is an autonomous Institution with considerable academic and operational freedom, as decided by its Board of Governors, under the broad umbrella of the IIT Council. Each IIT has evolved in its own way, it has unique strengths. Our proposal recognises that a one-size-fits-all model does not work with IITs. Some IITs already have higher female ratios, each IIT has different constraints in terms of hostel space, classroom and lab space, differing emphasis on UG vs. PG, and so on. Hence, each IIT could be given the freedom to decide on its target female percentage.

The IITs are viewed as a system. Once the percentage of women in some IITs increases, all IITs will be seen as more attractive to women and their percentages will also improve.

3.3.4 Quality of the Intake

A criticism of preferential treatment of a disadvantaged group is that it dilutes quality. In this context, we note that only female candidates who have qualified in JEE (Advanced) are considered. This implies that they are in the top 2% of all students admitted to engineering in India. Further, all evidence such as Board exam results indicates that they are as meritorious as their male counterparts.

The ranks of females in JEE (Advanced) are lower due largely to systematic societal biases that deprive them of support for JEE (Advanced) preparation equal to that given to boys. Essentially, they have been deprived of the opportunity to get a high rank by these biases, not by any inferior intellectual capability or inferior schooling. Male candidates who get a high rank without these deprivations are not more meritorious than females who have got a rank despite deprivations.

Analysis of the choice lists of mid-ranking female candidates who did not take an IIT seat indicate that this was often due to preference for a few branches and/or for a few IITs. When supernumerary seats are added, many of the additional females allotted are from within these mid-ranks. Hence, they are comparable to the females who had got allotted in gender-neutral.

A study at IIT-D of the performance of graduands over 13 years (2003-2015) was done by R. Kaur and S. Banerjee. It was found that the first semester SGPA is highly correlated with final CGPA. In every one of the years, female BTech students got higher CGPA than the male students. On the average, females earned 1 grade higher than males. This superior performance is despite the lower JEE ranks of the female students relative to males.

3.3.5 Phased Rollout

Intake and a good quality of education depends on several pre-conditions: availability of hostel space, classrooms and labs, and faculty to teach and guide the students. Each IIT has its own constraints in space and faculty. Some of the growing IITs may have excess buildings and can quickly ramp up female intake. Mature IITs may be close to capacity and will need to embark on new construction that will take 1-2 years to become available.

For these reasons, it is not possible to increase the intake from 8% to 20% in one fell swoop. Considering various factors, we recommend that all IITs increase by a minimum of 4-5% in the first year and achieve 20% in 2-4 years. After 2-3 years of operation of our proposal, there will be organic growth in the number of women getting into gender-neutral seats. We expect that the number of supernumerary seats will peak after 2-4 years and decline to zero in 5-8 years.

4 Acknowledgements

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